Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : 7_ Astronomy

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Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Mark Schemes

Q1.

Question Number	Answer	Mark
	C **both Redshift and CMB can be explained by the Big Bang theory** ***A*** *is not correct because CMB can be explained by the Big Bang* ***B*** *is not correct because the Steady State theory cannot explain CMB* ***D*** *is not correct because the Steady state theory can explain red shift*	**(1)** **AO1**

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Q2.

Question number	Answer	Additional guidance	Mark
	An explanation that combines identification – understanding (1 mark) and reasoning/justification – understanding (2 marks): • both theories predict an expanding universe and the Big Bang theory also predicts that the universe had a beginning (1) • the red shift theory indicates that the universe is expanding so supports both theories (1) • whereas CMB also indicates that the universe had a beginning, so supports Big Bang theory (1)	provided evidence that the Steady State theory was incorrect	**(3)**

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Q3.

Question number	Answer	Additional guidance	Mark
	similarity (both have) expanding Universe (1) **difference** one from: Steady State, Universe has no beginning (1) Steady State theory requires the continual formation of new matter, the Big Bang theory does not (1)	 different interpretation of CMBR	**(2)** **AO1**

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Q4.

Question number	Answer	Mark
	An answer that combines 2 points of understanding to provide a logical description: • Discovery of cosmic **background** microwave radiation (1) • Could be explained as resulting from Big Bang (1) • Could not be explained by steady state theory (1)	**(2)**

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Q5.

Question Number	Answer	Additional guidance	Mark
(i)	a description to include: nebula collapses (1) under **gravity** (1) plus any one from: GPE converted into KE (1) OR (very) **high** temperatures/pressures reached (1)	 allow gas/dust for nebula allow condensing/coming together for collapses allow gravitational force producing (large) increase in **KE** of particles / more (frequent) collisions Ignore references to hot / heat	**(3)**

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Question Number	Answer	Additional guidance	Mark
(ii)	rearrangement **and** substitution (1) (m =) $\frac{3.86 \times 10^{26}}{(3.00 \times 10^{8})^{2}}$ evaluation (1) (m =) 4.29×10^{9} (kg)	 ignore Power Of Ten (POT) error until evaluation allow numbers that round to 4.3×10^{9} (kg) award full marks for the correct answer without working 4.3 to any other power of ten scores 1 mark	**(2)**

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Q6.

Question number	Answer	Additional guidance	Mark
	An answer that combines the following points of application of knowledge and understanding to provide a logical description: • start the clock when the Sun is at the highest point (1) • finish the clock when the Sun is at the highest point again (1)	Shadow is shortest	**(2)**

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Q7.

Question Number	Answer	Additional guidance	Mark
	an answer that provides a description by making reference to: • the frequency is lower (1) • the wavelength is longer (1)	award one mark for doppler shift if no other mark is awarded	**(2)**

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